SUFFOLK COUNTY COMMUNITY COLLEGE

Department of Engineering Science and Industrial Technology

-Course Outline-

Course Title: CCNA R&S – Connecting Networks — Course #: CYBT232
3 hours — 3 credits

Prerequisite: CYBT121
Corequisite: CYBT231

Text:
1. CCNA R&S – Connecting Networks v6 Companion Guide
   ISBN-13: 978-1-58713-432-6 (Pub Date September 2017)

2. Online Curriculum: Cisco Networking Academy NetSpace, https://www.netacad.com

Optional texts:
1. CCNA R&S – Connecting Networks v6 Lab Manual, Cisco Press
   ISBN-13: 978-1-58713-429-6 (Pub Date August 2017)

Instructor: Name: Richard Johnston — Term: Fall 2018
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Procedure: Students will be responsible for completing the online curriculum as well as reading text #1.Students are required to complete online chapter exams assigned for each week. The assigned chapter will be reviewed in class before each online exam.

Lab Procedure: Labs will be completed in class. The labs can be printed from the online curriculum, or the labs can be downloaded in Microsoft Word format from the student resources website provided. Students may use the electronic form of the lab and enter their results using the computers in the labs. Printing of labs is not to be done in the classroom. The labs will be collected electronically for grading at the instructor's discretion.

Attendance: Students are responsible for all that transpire s in class whether or not they are in attendance. All students are expected to attend every session of this course. Absences exceeding more than the equivalent of ONE WEEK of classes, may lead to failure or removal from the class roster.

Grading Policy:

Chapter Exams	= 15%
Labs/Class participation	= 10%
Lab Proficiency tests	= 25%
Final Exam	= 50%

The Cisco Networking Academy Gradebook will compute grades for each CCNA course, with a certificate and congratulatory letter upon satisfactory completion.

Objectives: Upon completion of this course, the student will be prepared to take either the Cisco ICND2 or the CCNA Certification Exams at a certified testing center.
The Cisco CCNA® Routing and Switching curriculum provides a comprehensive overview of networking; from fundamentals to advanced applications and services. The Connecting Networks component discusses the WAN technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Students learn how to configure and troubleshoot network devices and resolve common issues with data link protocols. Students will also develop the knowledge and skills needed to implement virtual private network (VPN) operations in a complex network.

Learning Outcomes

Students who complete the Connecting Networks course will be able to perform the following functions:

- Understand and describe different WAN technologies and their benefits
- Understand and describe the operations and benefits of virtual private networks (VPNs) and tunneling
- Understand, configure, and troubleshoot serial connections
- Understand, configure, and troubleshoot broadband connections
- Understand, configure, and troubleshoot tunneling operations
- Understand, configure, and troubleshoot Network Address Translation (NAT) operations
- Monitor and troubleshoot network operations using syslog, SNMP, and NetFlow
- Understand and describe network architectures:
    - Borderless networks
    - Data centers and virtualization
    - Collaboration technology and solutions

COURSE TOPICS

Week 1 Wide Area Network Design
- WAN Technology Overview
- Enterprise Network Architecture
- Evolving Network Architectures
- Selecting a WAN Technology

Week 2 Point-to-Point Protocol Connections
- PPP Connections and Implementations
- PPP Configurations
- PPP Troubleshooting

Week 3 Remote Branch Connections
- DSL Configuration
- PPPoE Operation
- Configure PPPoE
- Troubleshoot PPPoE Connectivity

Week 4 Virtual Private Networks
- VPN Technologies
- GRE Configuration
- Troubleshoot GRE Connectivity
- IPSec Framework

Week 5 eBGP Connections
- Protocol Overview
- eBGP Design Considerations
- eBGP Configuration and Troubleshooting

Week 6 – 7 Access Control Lists (ACL)
- ACL Usage Overview
- Standard ACL Configuration
- Extended ACL Configuration
- IPv6 ACL Configuration
- Troubleshooting ACLs

Week 8 – 9 Network Security and Monitoring
- LAN Security Implementations
- LAN Attacks and Best Practises

- SNMP Command and Control
- SPAN Monitoring
- Syslog, Netflow, & MRTG Monitoring

Week 10 Quality of Service
- QoS Overview
- QoS Mechanisms

Week 11 Network Evolution
- Internet of Things (IOT)
- Cloud and Virtualization
- Network Programming

Week 12 - 13 Network Troubleshooting
- Using IP Service Level Agreements (SLA)
- Troubleshooting Tools
- Symptom and Causes

Week 14 - 15 Review and final exams: Written and practical components.